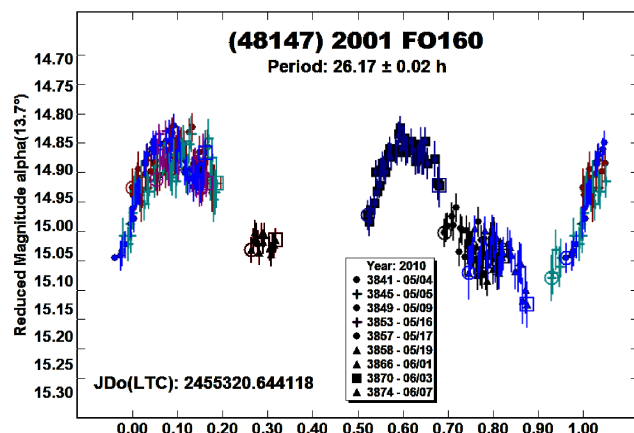
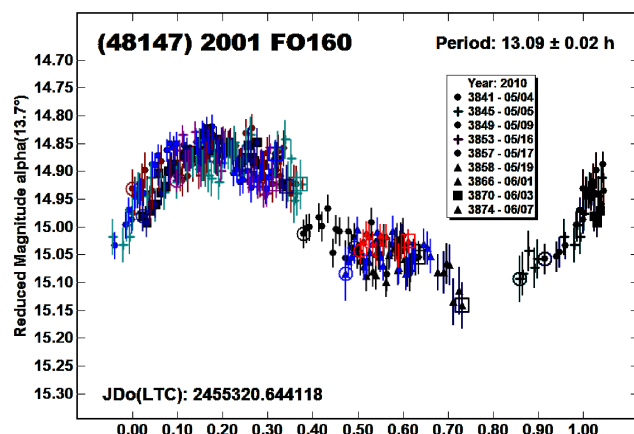
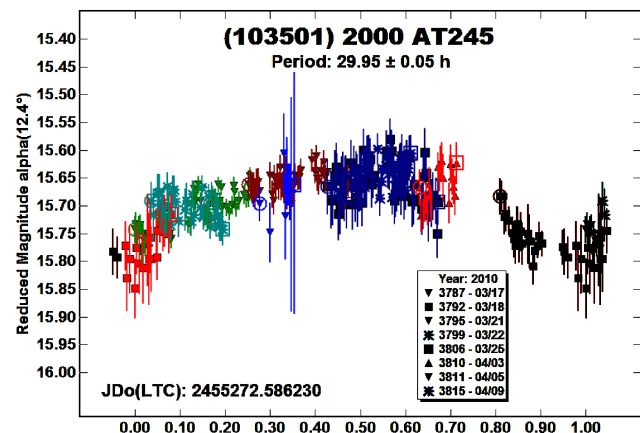
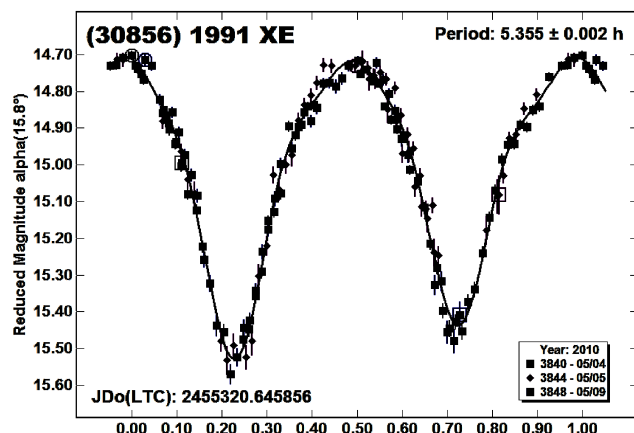
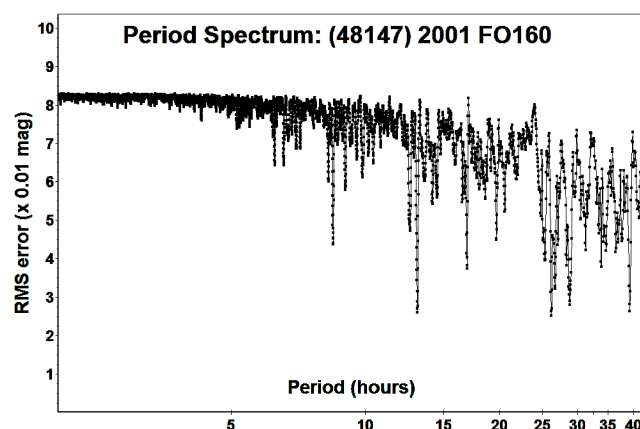
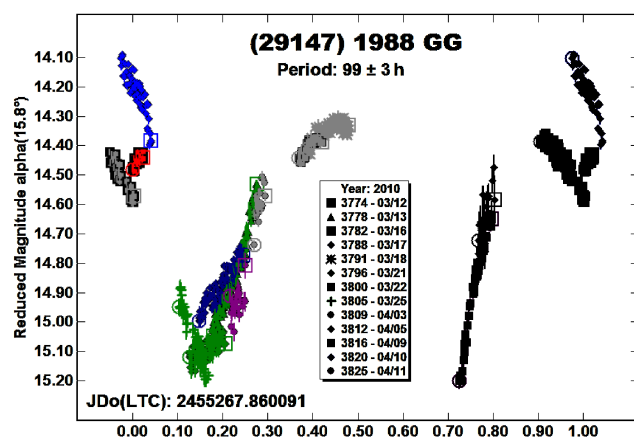




THE LIGHTCURVE OF NEAR-EARTH ASTEROID 2010 NR1

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A lightcurve for the newly-discovered Near-Earth asteroid 2010 NR1, was obtained from Tzec Maun Observatory in Moorook, South Australia (MPC Code D96) from a single night's observations on 2010 July 10. An approximate period of 0.89 h was found along with an amplitude of 1.8 mag, indicating a very-elongated body.

Observations of the near-Earth asteroid 2010 NR1 were obtained by utilizing a 0.15-m TOA-150 refractor and a SBIG STL-6303 CCD imager. All images were with a clear filter, unguided, and using three-minute exposures. The camera was binned 2x2 giving 3.4 arc-second pixels. Measurements were made using *MPO Canopus* (Warner, 2010a). This particular near-Earth asteroid had no published lightcurve since it had only just been discovered. As well as generating a lightcurve, confirmation astrometry was also submitted to the Minor Planet Center. At the time of imaging this object, it was temporarily designated as RN4AF02. A second night of follow-up observations was impossible due to poor sky conditions over a period of several nights. These appear to be the

only lightcurve observations obtained of 2010 NR1 since it quickly faded after discovery.

Based on 2010 NR1's large lightcurve amplitude of 1.8 mag., it is assumed that this object is that of a highly elongated body. From the 14 data points acquired of this object over the period of nearly an hour, it was determined that this object has a rotational period of 0.89 ± 0.04 h. 2010 NR1 has an H value of 21.9 (MPC), which places it in the range of 110 to 240 meters, depending on the assumed albedo. With a rotational period of 0.89 ± 0.04 h, this object is likely that of a body that is "strength-dominated", e.g., a monolithic body, rather than that of a "rubble pile" or "gravitationally-bound" asteroid.

References

Warner, B. D. (2010a). MPO Software, Canopus version 10. Bdw Publishing, Colorado Springs, CO.

Warner, B.D. (2010b). *A Companion Guide to the MPO Canopus/PhotoRed Reference Manual*. Bdw Publishing, Colorado Springs, CO.

IAU Minor Planet Center.

www.minorplanetcenter.org/iau/mpc.html

ROTATION PERIOD DETERMINATION FOR 2375 RADEK

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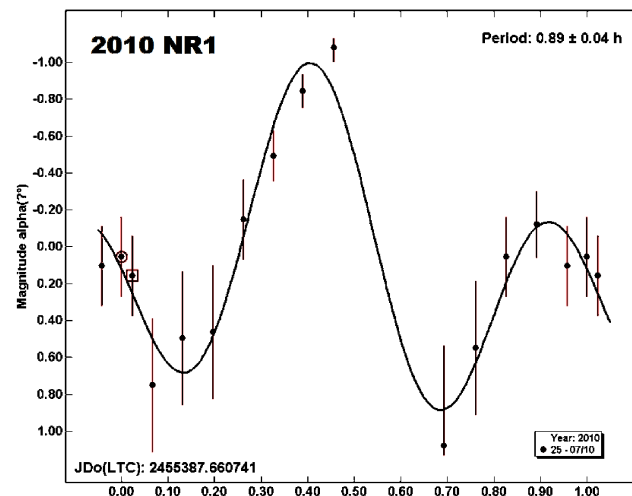
A synodic rotation period of 16.875 ± 0.001 h and amplitude of 0.20 ± 0.01 mag were determined for the asteroid 2375 Radek from unfiltered CCD photometric observations carried out at two locations, Belgrade, Serbia, and Las Cruces, NM, USA.

2375 Radek is a main-belt asteroid discovered in 1975 by L. Kohoutek in Bergedorf. Prior to our work no results for the rotation period of this asteroid were known. Sada et al. (2005) reported an unsuccessful attempt to find an unambiguous period from their 2004 observations. The object was favorably suited for photometric observations in 2010 April and May when it reached $V \sim 14.1$ in opposition on April 29. It was listed as a potential lightcurve target in the period 2010 April-June on the CALL web site (Warner and Harris, 2010). Benishek started the observations on 2010 April 8 at the Belgrade Astronomical Observatory employing a 0.4-m SCT operating at f/10 with an unguided SBIG ST-10 XME CCD camera. Pilcher at Organ Mesa Observatory joined the observations on 2010 April 21 using a 0.35-m SCT operating at f/10 and equipped with an unguided SBIG STL-1001E CCD camera. The object was observed over 9 nights until May 10. All observations were unfiltered.

Tzec Maun Foundation - www.tzecmaun.org

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The photometric reductions as well as the period analysis were performed using *MPO Canopus* software by BDW Publishing. Linkage of the individual data sets was achieved by adjusting instrumental magnitudes. The period analysis performed with all 9 sessions gives an unambiguous solution of $P = 16.875 \pm 0.001$ h. The amplitude of 0.20 ± 0.01 mag was found from the composite bimodal lightcurve.

References

Sada, P.V., Canizales, E.D., and Armada, E.M. (2005). "CCD Photometry of Asteroids 651 Antikleia, 738 Alagasta, and 2151 Hadwiger using a Remote Commercial Telescope." *Minor Planet Bulletin* **32**, 73-75.

Warner, B.D. and Harris, A.W. (2010). "Potential Lightcurve Targets, 2010 April-June."

http://www.minorplanetobserver.com/astlc/targets_2q_2010.htm

